

DSM ENVIRONMENTAL SERVICES, INC.

Engineers, Economists, Environmental Scientists, Planners

JUN 3 2 40 PM '00

June 2, 2000

Ms. Lynda Provencher  
State of Vermont  
Agency of Natural Resources  
Waste Management Division  
Sites Management Section  
103 South Main Street / West Building  
Waterbury, Vermont 05671-0404

Re: Luzenac America, Columbia Mill  
UST Site Investigation  
SMS #99-2619  
DSM Project Number 347

Dear Ms. Provencher:

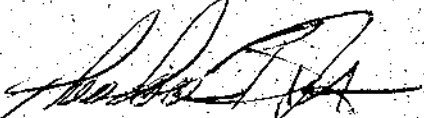
DSM Environmental Services, Inc. (DSM) has completed a site investigation of a former underground storage tank (UST) site at the Columbia Mill Site, in Ludlow, Vermont. This site is owned and operated by Luzenac America.

Enclosed, please find one copy of our final report for this investigation.

Please feel free to contact either Howard Clay at Luzenac America (802-228-6408) or me if you have any questions concerning this report.

Very truly yours,

DSM Environmental Services, Inc.



Theodore S. Reeves, P.E.  
Principal, Senior Project Manager

tsr

Enclosures

c: Howard Clay - Luzenac America

Thrasher Rd & Route 5, PO Box 466, Ascutney, VT 05030

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Phase (check one)	Type (check one)
XX Initial Site Investigation	Work Scope
Corrective Action Feasibility Investigation	XX Technical Report
Corrective Action Plan	PCF Reimbursement Request
Corrective Action Summary Report	General Correspondence
Operations & Monitoring Report	

## INITIAL SITE INVESTIGATION

Luzenac America  
73 East Hill Road  
Ludlow, Vermont

SMS Site Number: 99-2619

Latitude/Longitude:  
N 43° 23.127'  
W 72° 40.026'

Facility Owned by:  
Luzenac America  
P.O. Box 680  
Windsor, VT 05089  
(802) 228-6408

Contact: Howard Clay

Site Investigation Report Prepared by:  
DSM Environmental Services, Inc.  
P.O. Box 466  
Ascutney, VT 05030  
(802) 674-2840

Contact: Theodore Reeves, P.E.

## **Executive Summary**

Luzenac America, Inc. (Luzenac) operates talc mining and milling facilities in Ludlow, Vermont. In April of 1999, the existence of a former concrete underground fuel oil storage tank (UST) on the site was brought to the attention of the Mill Manager by a staff member. Luzenac hired DSM Environmental Services, Inc. to conduct an assessment/investigation of possible environmental issues with the tank's presence.

The tank was reported to be, and is shown on drawings found of the tank's construction to be a rectangular, 120,000-gallon, cast-in-place reinforced concrete tank built in 1974 (date approximate). The tank was constructed by Windsor Minerals, Luzenac's predecessor at the site. The tank was used to store #2 fuel oil. Fuel oil was brought to the site by rail car and pumped up to the tank from the siding at the toe of the hill below. The tank's use was curtailed, and the tank was reportedly destroyed in the early 1980s.

DSM Environmental Services staff worked with Luzenac personnel to complete two test pit excavations at the site of the former UST. Samples were collected from the second test pit and two groundwater seeps at the site. These samples were analyzed for Total Petroleum Hydrocarbons (TPH) by Eastern Analytical, Inc. Concentrations of TPH were found in the soil sample (1,200 mg/kg) and the groundwater sample (68 mg/l) from the samples collected from the test pit. The samples collected from the two seeps failed to identify TPH concentrations in excess of the detection limit of the analytical method.

On June 7, 1999, DSM submitted a letter to the Vermont Agency of Natural Resources Waste Management Division describing the history, investigation, and findings to date. A copy of this letter is attached to this report as Appendix A. Based on the findings of the work in April, the Vermont Agency of Natural Resources requested additional investigation work is completed. A copy of the letter by the Agency is also included in Appendix A. The results of the site investigation requested by the Agency are included in this report.

The results of this investigation support the conclusion that one or more releases of a regulated material - #2 fuel oil - has occurred on the Luzenac property. However, residual concentrations in the soil and groundwater at the site are low with all concentrations of regulated materials below the Enforcement Standards of the Vermont Groundwater Protection Rule and Strategy. The setting of this site, lack of environmental impacts as a result of the releases, low residual concentrations of fuel oil in the groundwater, and the low potential for exposure to the environment and the public, do not warrant additional work at this site.

## **Site Information**

The names, addresses and phone numbers of the site owner, site operator and adjacent property owners are shown below in Table 1.

**TABLE 1**  
**SITE INFORMATION — CONTACT LIST**

CONTACT	NAME	MAILING ADDRESS	PHONE NUMBER
Site Owner Contact:	Luzenac America Howard Clay	P.O. Box 680 Windsor, VT 05089	(802) 228-6408
Site Operator	Same	Same	Same
List of Adjacent Landowners	See Appendix B		

### Site History

The Luzenac Ludlow Mill is a talc mining and milling facility in Ludlow, Vermont, which has been in operation for approximately 25 years.

In 1974 (date approximate), Luzenac's predecessor, Windsor Minerals constructed a cast-in-place reinforced concrete storage tank for #2 fuel oil. The tank was partially above ground but qualified as an underground storage tank as defined by the Vermont Underground Storage Tank Rules (10 VSA Chapter 59). The footprint of the tank was 39 feet by 46 feet. The nominal capacity of the tank was approximately 120,000 gallons.

According to Luzenac staff, Windsor Minerals pumped out the contents of the tank, destroyed the cover and walls of the tank, and buried the tank debris and foundations with soil and talc in the early 1980s. Luzenac's management was unaware of the presence of the tank until the beginning of April 1999 when one of the mill staff mentioned the tank to Luzenac's Mill Manager.

The former tank location is positioned on a hillside, east of the Mill Building at the Luzenac facility. For reference, a locus plan is attached in Appendix C. The tank was built on a manmade plateau. The plateau was excavated from the hillside.

The area surrounding the former tank location is heavily wooded and steep. The Mill Building is located approximately 100-125 feet to the west of the former tank location. Other than the Mill Building, no other permanent structures are in the immediate area around the tank.

Down gradient from the former tank location is a swale, and railroad tracks operated by New England Central Railroad. The tracks in this area run generally east and west. To the north of the railroad tracks approximately 1/4 mile is the Black River. Surface waters in the area of the tank include two small seeps located northwest and northeast of the former tank location. At the time of DSM's field investigations, these seeps were issuing only a small amount of water. The two seeps had small puddles of stagnant water during the low water months. DSM did not note the presence of any other seeps at this location.

## **Receptors**

All potential receptors were identified in the vicinity of the former tank location at the Luzenac Ludlow site. Each potential receptor is described below.

### *Water Supply Wells*

There are no known water supply wells within 1,000 feet of the site.

### *Community Water Supplies*

There are no known community water supplies within 1,000 feet of the site.

### *Surface Waters and Wetlands*

The Black River is located down gradient and approximately 1/4 mile north of the UST site. Two small seeps are located approximately 20 feet of the former tank location, one to the northeast and one to the northwest. No other surface water bodies or wetlands were identified within 1,000 feet of the site.

### *Buildings with Basements*

There are no buildings with basements within 1,000 feet of the site. The Mill Building is located approximately 100 feet west, and cross-gradient from the UST site. This building is "slab-on-grade" construction.

### *Sensitive Ecological Areas*

No sensitive ecological areas have been identified in the immediate area around the site.

### *Utility Corridors*

Railroad tracks operated by New England Central Railroad cross to the north and down gradient of the former UST site. No other utilities are known in the area around the former UST.

### *Areas of Direct Soil Contact Threat*

No areas of direct soil contact threat were identified on the site. The debris from the former UST and soils that have varying, low levels of hydrocarbons, are buried under approximately five feet of soils. The risk of contact with petroleum products by the general public are very low.

## **Contaminant**

Historic use of the UST for and analytical data gathered to date show the contaminant of concern to be petroleum hydrocarbons common to #2 fuel oil. A material safety data sheet (MSDS) for

#2 fuel oil is attached to this report as Appendix D. The Properties of #2 fuel oil are described on the MSDS including toxicological information.

## **Geology**

The site is in the Black River watershed, approximately 1/4-mile from and approximately 150 feet above the river. The site is on a manmade plateau excavated out of a steep wooded hillside. Soils at this site are typically silts, tills and clays. The United States Department of Agriculture, Natural Resources Conservation Service (NRCS) describe the soils at this site as being Marlow fine sandy loam. These soil types are described as being very-deep well drained basal till soils with moderately or slow permeability in the substratum. Depth to bedrock in these soils is described as being typically greater than 60 inches. A full description of the soils, mapping, and NRCS soil descriptions for this type are attached to this report as Appendix E.

Soils immediately surrounding the former tank site are disturbed soils and fill resulting from the original construction of the site's plateau and subsequent destruction and filling of the tank.

Four Groundwater monitoring wells were constructed at this site in bore holes completed by hollow stem augers. During completion of the soil borings, split spoon samples were collected at five-foot intervals using a standard split spoon and penetration tests. Completion of the monitoring well construction is described below. During completion of the monitoring wells and the soil borings, soil logs were completed describing soil lithology for each soil boring and location. For a complete description of the soils on this site and lithology, please see the soil boring logs attached as Appendix F.

## **Test Pit and Monitoring Well Installation and Sampling**

Two test pits were completed in May 1999. Subsurface soil and water samples were taken and submitted to a laboratory for analysis of total petroleum hydrocarbons (TPH). The analysis methods used was method 8100 (modified).

Following the initial investigation of the site, Luzenac America corresponded with the Vermont Agency of Natural Resources. The Agency requested that a site investigation is completed for the former UST facility. As part of the site investigation four groundwater monitoring wells have been constructed in soil borings at the site. Three of the wells were located down gradient and one well up gradient of the former tank location.

The wells were located based on the topography of the site. DSM hypothesized that groundwater on the site generally follows the topography due to the steep slope where the former UST was located. Therefore, the up-slope well was positioned as an upgradient well in an effort to define background conditions. The three wells located to the north of the former UST location are intended to act as down gradient wells monitoring groundwater flow regimes, and possible contaminant migration.

Groundwater samples from the up gradient well (monitoring well #1) and one of the down gradient wells (monitoring well #4) were collected on August 17, 1999. Surface water samples were collected from the two groundwater seeps located down the slope from the UST site. Due to the low water table at the time, samples could not be collected from monitoring wells #2 and #3A. The seeps were re-sampled on August 30, 1999 for TPH since the sample bottles for the samples collected on August 17, 1999 broke in transit to Eastern Analytical.

Since the groundwater table was low during the months of August and September, DSM and Luzenac agreed to re-sample the site on October 19, 1999. Samples were collected on this date from the four groundwater monitoring wells and one of the two seeps. The westerly seep (designated "seep west") was dry.

Analysis results for all of the sampling efforts are reported below.

#### *Monitoring Well Installation*

All groundwater monitoring wells were completed using 2-inch diameter, schedule 40 flush-threaded PVC risers, 10-foot long 0.10-inch factory slotted PVC screens and a bottom plug. All well screens were installed to intersect the water table at the time of well installation, extending approximately 5 feet into the saturated zone.

Each well was centered within its borehole while clean silica sand was placed in the annular space surrounding the well screen to a depth of approximately 1.5 feet above the top of the screen. This sand pack was directly overlain by approximately 1.5- to 2-foot thick layer of bentonite clay chips. Sand and bentonite chips used in the well construction were introduced to the wells from ground level and allowed to settle before well installation proceeded. Each well was completed with a removable, screw-threaded friction cap and concrete-secured steel casing protective casings extending approximately 3 feet above grade. Well construction detail sheets and boring logs are included in Appendix F.

#### *Subsurface Characterization*

Soil characterization encountered during completion of the soil borings can generally be described as fine, silty sands overlying till. Groundwater at the site follows the topography of the site and flows generally north northwest (based on October 19, 1999 monitoring).

#### **Hydrogeology**

Groundwater was encountered at approximately four feet below ground surface in monitoring well #1 and approximately 12 feet below grade in monitoring well #3. Table 2 summarizes well and water level data for the October 19, 1999 sampling event.

**TABLE 2.**  
**MONITORING WELL DATA FROM October 19, 1999**  
**Measured from Top of PVC Riser**

Monitoring Well	Location	Depth to Groundwater (Feet)	Depth of Water in Well (Feet)	Assumed Groundwater Elevation (Ft)	Elevation Top of PVC (Feet)
MW-1	South of former tank site	4.9	4.9	1021.9	1026.6
MW-2	Northeast of former tank site	14.7	0.3	1010.0	1024.5
MW-3	North of former tank site	15.6	1.3	1009.1	1024.5
MW-4	Northwest of former tank site	15.5	3.3	1009.5	1024.85

### **Plume Definition**

If a contaminant plume were to form from a release at the site of the former storage tank, it would trend to the northwest from the UST site. Groundwater generally follows the steep slope in that direction. The monitoring wells were placed in an attempt to intercept such a plume.

### **Free Product**

No free was encountered during the investigation of this site.

### **Contaminant Fate and Transport**

If contaminant plume were to spread from the site, it would travel by groundwater. Contaminant transport at this site is fairly limited due to the low concentrations found during sampling of the groundwater wells in October 1999.

### **Groundwater and Surface Water Sampling**

As described above groundwater and surface water seeps at this site was sampled and analyzed on two separate occasions. The first sample collection event occurred on August 17, 1999. The sample bottles used for TPH analysis of the two surface seeps broke during transit from the site to the laboratory. The seeps were re-sampled for TPH on August 30, 1999. A more complete round of water samples was collected on October 19, 1999 however, the west seep was dry and was not sampled.



### *Sampling, August 17, 1999:*

#### *Groundwater:*

Prior to groundwater sampling, each well casing was evaluated for signs of damage or tampering. No problems were evident. The friction plug was removed and the well was left open to allow water pressures to equilibrate before depth to water in the wells was measured using an electronic tape. All measurements were recorded in a field book. Monitoring wells MW-2 and MW-3 were dry.

One factory-sealed disposable bailer and a length of new nylon twine were dedicated to MW-1 and another to MW-4. This eliminates the potential of cross contamination between wells and the need for field decontamination of sampling equipment. All practices outlined in the site Health and Safety Plan were followed. The two wells were bailed dry before three well volumes were removed. 15 hours later the samples were taken using the dedicated bailers and laboratory-supplied containers.

#### *Surface Water*

The two surface water seeps to the north and down gradient from the former tank location were sampled on August 17 along with the monitoring wells. During transport to the laboratory, the two bottles that were to be used for TPH analysis were broken. The samples were retaken on August 30. The samples were taken by placing the sampling bottle into a stagnant puddle formed by the seep. Care was taken not to include particulate matter in the sample.

### *Sampling, October 19, 1999:*

#### *Groundwater:*

Utilizing the same protocols described above, a new round of groundwater samples was collected from the four monitoring wells on the site on October 19, 1999. Samples collected at this time were submitted to Eastern Analytical, Inc. for analysis of VOCs and TPH by methods 8120b (modified) and method 8100 (modified) respectively.

#### *Surface Water:*

Surface water samples were collected from seep east during this sampling event and also submitted for analysis of VOCs and TPH. Sample location seep west was not sampled due to a lack of water in the seep.

## **Laboratory Results**

### *Analyses*

Samples from the August sampling event, along with a Field Blank, were submitted to Eastern Analytical, Inc. (EAI) for analysis by methods 8260B (VOCs) and 8100-LI (TPH). Sample

bottles were sealed in individual plastic bags, placed in a cooler with ice packs and shipped under chain-of-custody via overnight courier.

The samples collected in October followed these same protocols. However, requested analysis for these samples was 8120b (modified) for VOCs and 8100 (modified) for TPH. The difference in analysis methods was a cost consideration.

#### *Results:*

Sample analysis results are shown on Table 3 on the following page. Based on the work completed on the Luzenac site, and the samples collected, the analysis results indicate that there are no contaminants present in the collected ground or surface water samples that exceed the Enforcement Standards of the Vermont Groundwater Protection Rules and Strategy.<sup>1</sup> The laboratory results in their entirety are included in Appendix G.

#### **Interpretation of Results**

The laboratory results indicate that minor concentrations of contaminants have entered the environment. These contaminants are present as a result of releases of #2 fuel oil from the former UST located on the Ludlow Mill property. Based on the work completed at this site, it appears that the contamination has remained in place and not migrated from the location of the former tank.

#### **Conclusions and Recommendations**

Based on our review of this site and the work completed to date, DSM Environmental Services recommends that no additional work is warranted at this site. The site is remote and wooded. No potable water sources or other sensitive receptors are located near the site. Contamination appears to be contained within the remains of the old tank.

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<sup>1</sup>Vermont Groundwater Protection Rule and Strategy (10 VSA Chapter 48), effective November 15, 1997.

**Table 3.**  
Luzenac America Ludlow Mill  
UST Site Investigation  
Analysis Results Summary

GW Enforcement		August, 1999							
Contaminant	Standard	MW 1	MW 2	MW 3	MW 4	Seep East	Seep West	Field Blank	Notes
Acetone	700	BDL	NS	NS	BDL	BDL	BDL	20	(1)
Benzene	5	BDL	NS	NS	BDL	BDL	BDL	BDL	
Toluene	1000	BDL	NS	NS	BDL	BDL	BDL	BDL	
Ethylbenzene	700	BDL	NS	NS	BDL	BDL	BDL	BDL	
m,p,o - Xylene	10000	BDL	NS	NS	BDL	BDL	BDL	BDL	
Naphthalene	20	BDL	NS	NS	BDL	BDL	BDL	BDL	
1,3,5-Trimethylbenzene	4	BDL	NS	NS	BDL	BDL	BDL	BDL	
1,2,4-Trimethylbenzene	5	BDL	NS	NS	BDL	BDL	BDL	BDL	
total petroleum hydrocarbons		BDL	NS	NS	BDL	BDL	BDL	BDL	

GW Enforcement		October 19, 1999						
Contaminant	Standard	MW 1	MW 2	MW 3	MW 4	Seep East	Seep West	Notes
Acetone	700	BDL	BDL	BDL	BDL	BDL	NS	
Benzene	5	BDL	BDL	BDL	BDL	BDL	NS	
Toluene	1000	BDL	2	1	BDL	BDL	NS	
Ethylbenzene	700	BDL	BDL	BDL	BDL	BDL	NS	
m,p,o - Xylene	10000	BDL	2	1	BDL	BDL	NS	
Naphthalene	20	BDL	BDL	BDL	BDL	BDL	NS	
1,3,5-Trimethylbenzene	4	BDL	BDL	1	BDL	BDL	NS	
1,2,4-Trimethylbenzene	5	BDL	2	1	BDL	BDL	NS	
total petroleum hydrocarbons		BDL	BDL	BDL	BDL	BDL	NS	

Notes:

(1) The presence of acetone in this sample is likely to be a laboratory error. Acetone was not present on the site during sampling or sample handling.

All contaminant concentrations are reported in micrograms/liter (ug/l) or part per billion equivalents.

BDL = Below detection limit of the analytical equipment

NS = Not sampled (no liquid available to sample).

Luzenac America Ludlow Mill

UST Site Investigation

Appendix A

Initial Report and Response, Vermont Agency of Natural Resources

# DSM ENVIRONMENTAL SERVICES, INC.

*Engineers, Economists, Environmental Scientists, Planners*

June 7, 1999

Ms. Lynda Provencher  
State of Vermont  
Agency of Natural Resources  
Waste Management Division  
103 South Main Street / West Building  
Waterbury, Vermont 05671-0404

**Re: Luzenac America  
Underground Storage Tank  
DSM Project 347**

Dear Lynda:

I am writing on behalf of Luzenac America, Inc. (Luzenac) concerning the discovery and initial investigation of an underground storage tank at their mill facility in Ludlow, Vermont.

*Background:* Luzenac operates talc mining and milling facilities in Ludlow, Vermont. The facilities have been operation for approximately 25 years.

In 1974 (date on design drawings), Luzenac's predecessor, Windsor Minerals constructed a cast-in-place reinforced concrete storage tank for #2 fuel oil. The tank was partially aboveground, and partially underground. Earth fill was placed up the sides of the tank approximately three feet. The total height of the tank was approximately 13 feet. The foot print of the tank was 39 feet by 46 feet. The nominal capacity of the tank was approximately 120,000 gallons. Based on the dimensions of the tank and the earth fill against the tank, the tank meets the definition of an underground storage tank (UST) as defined in the Vermont Underground Storage Tank Rules (10 VSA chapter 59).

According to staff at Luzenac, Windsor Minerals pumped out the contents of the tank. Then destroyed the cover and walls of the tank. After demolition of the tank, Windsor Minerals personnel buried the tank debris and foundations with soil and talc.

Luzenac's management was unaware of the presence of the tank until the beginning of April when one of the mill staff mentioned the tank to Luzenac's Mill Manager. Luzenac contacted DSM Environmental Services, Inc., to assess the tank and map out a program for assessment/investigation of possible environmental issues with the tank's presence.

*Setting:* The former tank location is positioned east of the Mill Building at the Luzenac facility. For reference, I have attached a locus plan. The tank was built on a manmade plateau. The plateau was excavated from the hillside.

The area surrounding the former tank location is heavily wooded, and steep. The Mill building is located approximately 100 - 125 feet to the west of the former tank location. Other than the Mill

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Ms. Lynda Provencher  
June 7, 1999  
page 2.

Building, no other permanent structures are in the area around the tank.

Down gradient from the former tank location is a swale, and railroad tracks operated by New England Central Railroad. The tracks in this area run generally east and west. To the north approximately 1/4 mile is the Black River. Surface waters in the area of the tank include two small seeps located at the ten o'clock and two o'clock positions from the tank (as you are facing north). At the time of our field investigations, these seeps were issuing only a small amount of water. It is our speculation that the two seeps are dry during the low water months. We did not note the presence of any other seeps at this location.

For reference, we have included photographs of the site and excavations to this letter.

*Investigation:* On May 3, 1999 I spoke with Chuck Schwer of the Vermont Agency of Natural Resources, Waste Management Division (ANR/WMD) concerning the possible presence of the tank. Since neither DSM or Luzenac personnel were certain of the tank's location and status, we proposed to complete test pit excavations of the site to try to determine the status of the tank and if we could determine any possible environmental issues. Mr. Schwer agreed with our approach to conduct test pit excavations.

On Wednesday, May 5, 1999, DSM and Luzenac staff met at the Ludlow site to complete exploratory excavations. Two excavations were completed. Each excavation was continued to approximately six feet in depth. Concrete rubble, silty soils (talc ore) and groundwater were encountered. During excavation of the test pits, DSM staff used a Photovac photoionization detector (PID) to field screen samples for the presence of volatile organic compounds (VOCs).

The first excavation was completed in what we assumed was the approximate center of the tank. When groundwater was encountered, we noted that the groundwater had an oily odor to it, and a sheen was visible. The first excavation was continued until we reached what we assumed was the old tank bottom.

We move further to the north to complete the second test pit excavation. This excavation was also continued down through talc ore and concrete rubble until we came into contact with what we believe to be the bottom of the tank. Groundwater was also encountered in this excavation. The excavation was continued to the north until we found what we believe to be the northern bound of the tank perimeter. This was confirmed by excavating down past the edge of the concrete. Reinforcing steel was also found at this perimeter where the concrete wall had been previously in place.

During the completion of both of the test pits, DSM staff collected and scanned samples of groundwater and soil collected from the test pits. These samples were scanned with the PID. Results of these scans indicated the presence of low levels of VOCs in the samples. The water sample collected from test pit 1 were approximately 17 ppm VOCs. The water sample from test pit two was approximately 42 ppm VOCs. A second sample was collected from the second test pit and was scanned, yielding 36 ppm. The samples exhibited the odor and appearance of containing oil.

Ms. Lynda Provencher  
June 7, 1999  
page 3.

DSM staff collected soil and groundwater samples from test pit number two for analysis for Total Petroleum Hydrocarbons (TPH). This analysis was completed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire. Surface water samples from the two seeps were also collected and forwarded to EAI for analysis of TPH. The results of the analysis indicated that the soil sample and groundwater sample collected from test pit number two contained concentrations of TPH. The TPH results for the soil sample indicated a concentration of 1,200 milligrams/kilogram (mg/kg or parts per million equivalent (ppm)) while the groundwater sample contained approximately 68 milligrams per liter (mg/l or parts per million). The samples collected from the two seeps did not contain TPH concentrations that exceed the detection limit of the analytical method. For reference, the analytical results for the samples are attached to this letter.

*Conclusions:* DSM Environmental Services staff worked with Luzenac personnel to complete two test pit excavations at the site of a former UST. This UST was a rectangular, cast-in-place, reinforced concrete tank that stored #2 fuel oil. The tank's use was discontinued in the early 1980's (as reported by Luzenac Mill personnel).

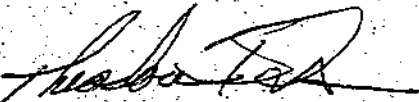
Samples were collected from the second test pit and two groundwater seeps at the site. These samples were analyzed for TPH. Concentrations of TPH were found in the soil sample (1,200 mg/kg) and the groundwater sample (68 mg/l) from the samples collected from the test pit. The samples collected from the two seeps failed to identify TPH concentrations in excess of the detection limit of the analytical method.

Based on our review of this site, DSM Environmental Services recommends no additional work is immediately warranted at this site. The site is remote, and is currently used as a small lay-down yard for unused equipment. The site is wooded, and located on a steep bank. There are no potable water sources located in the immediate vicinity of the former tank location, nor are there any sensitive surface water receptors other than the two seeps identified above.

Please take a moment to review the enclosed information. Should you have any questions or comments concerning this site or report, please feel free to contact DSM Environmental Services, or Mr. Howard Clay at Luzenac America (802-228-6408).

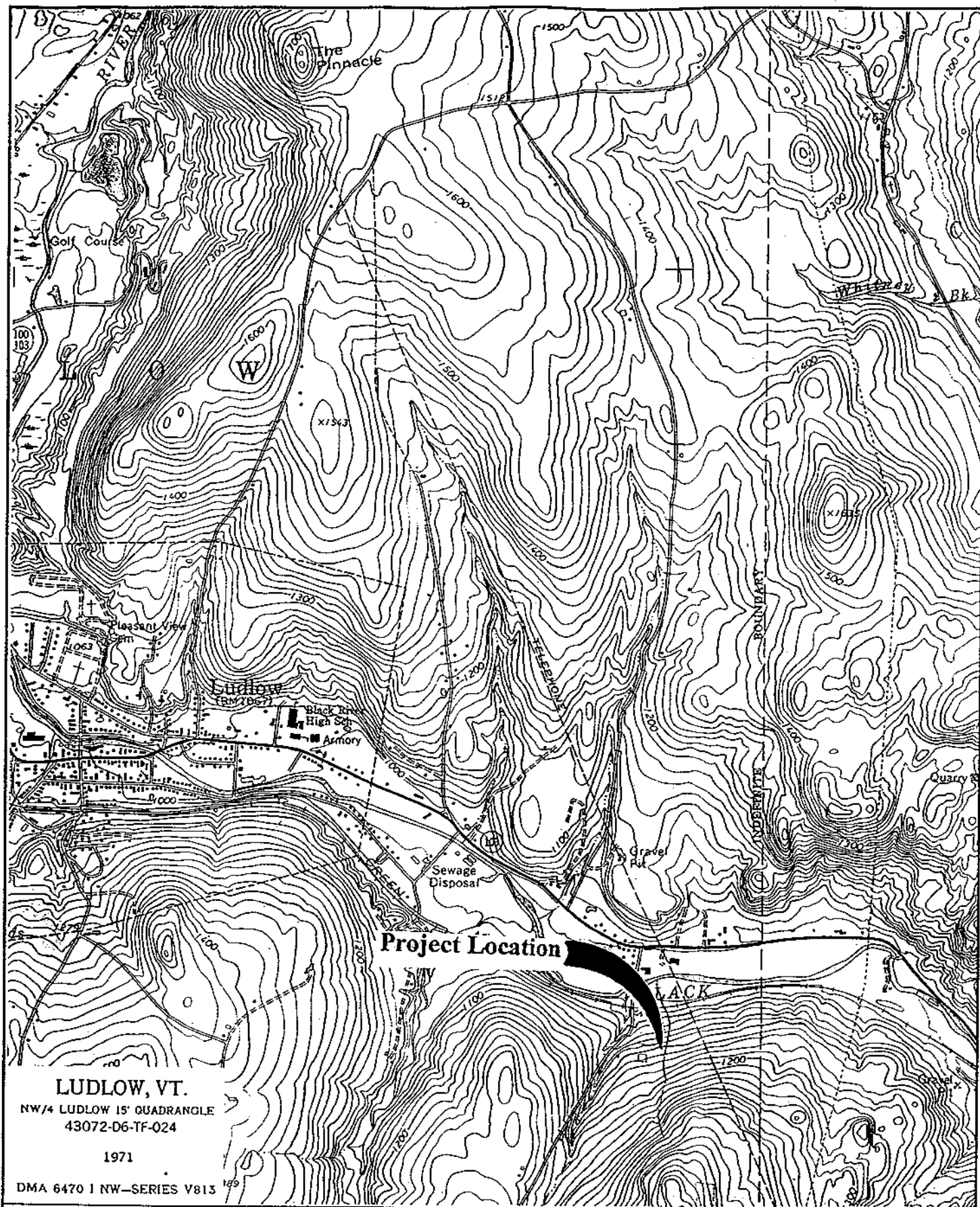
Very truly yours,

DSM Environmental Services, Inc.



Theodore S. Reeves, P.E.  
Senior Project Manager

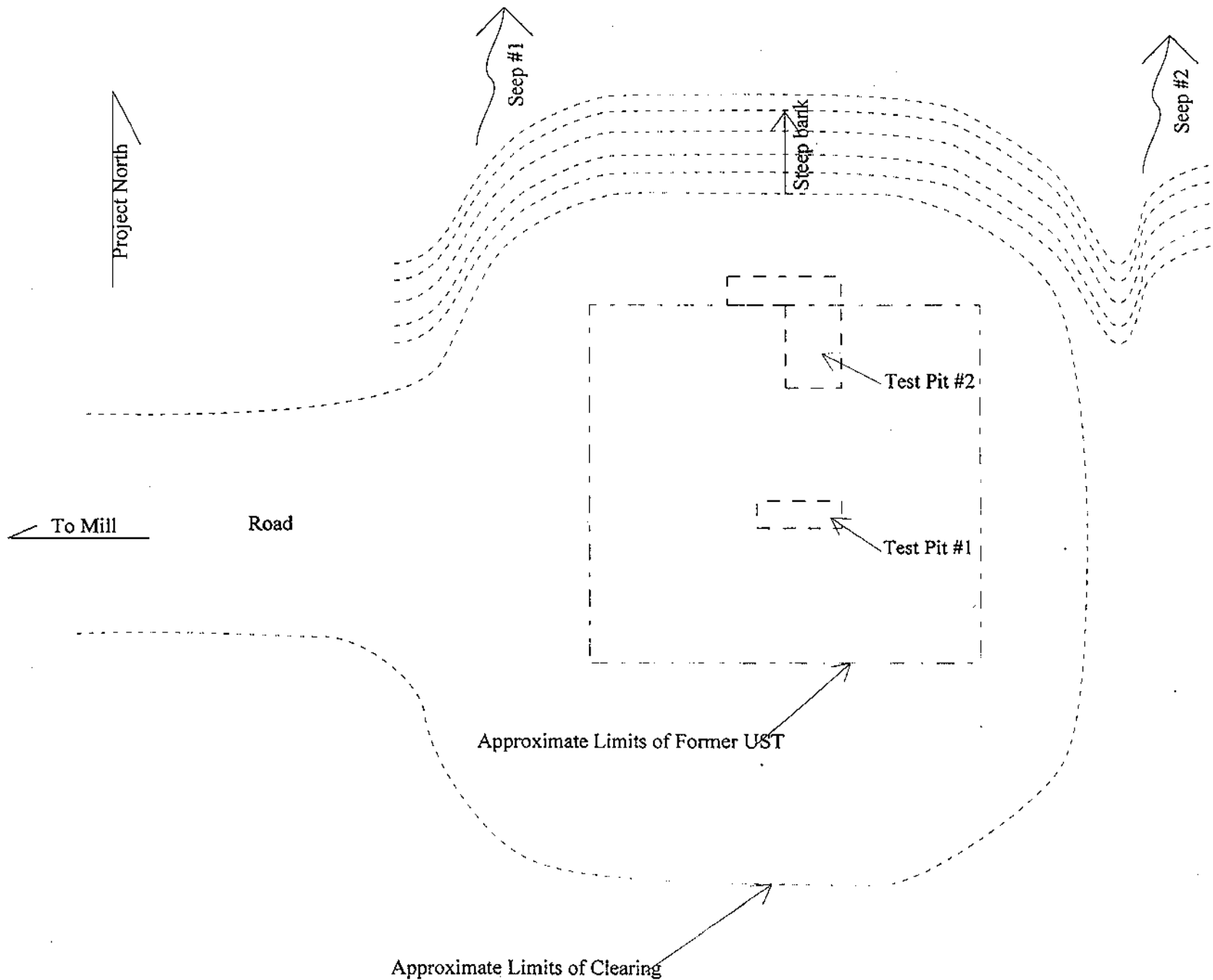
cc: Mr. Howard Clay - Luzenac America



DSM ENVIRONMENTAL SERVICES, INC	
DRAWN BY: T. Reeves	
Date: May, 1999	No Scale

Locus Plan  
Luzenac UST Site  
Ludlow, Vermont





Partial Site Sketch  
Luzenac UST Site  
Ludlow, Vermont

DSM ENVIRONMENTAL SERVICES, INC

DRAWN BY: T. Reeves

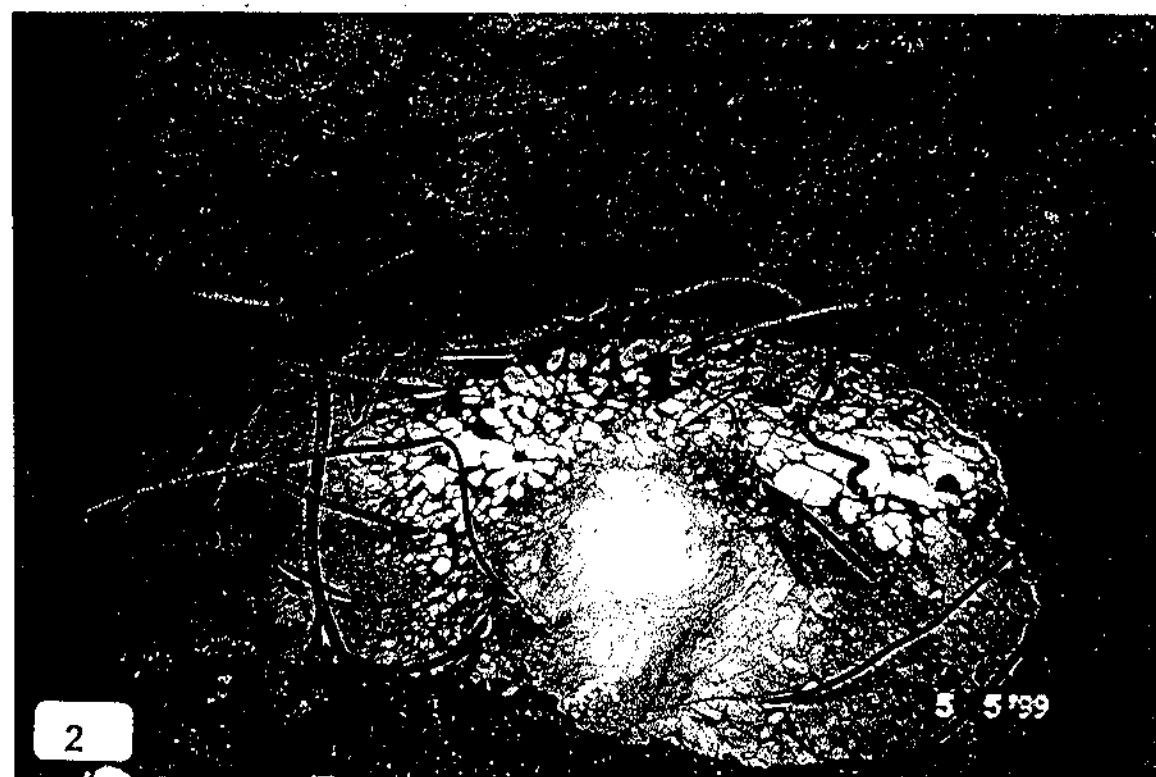
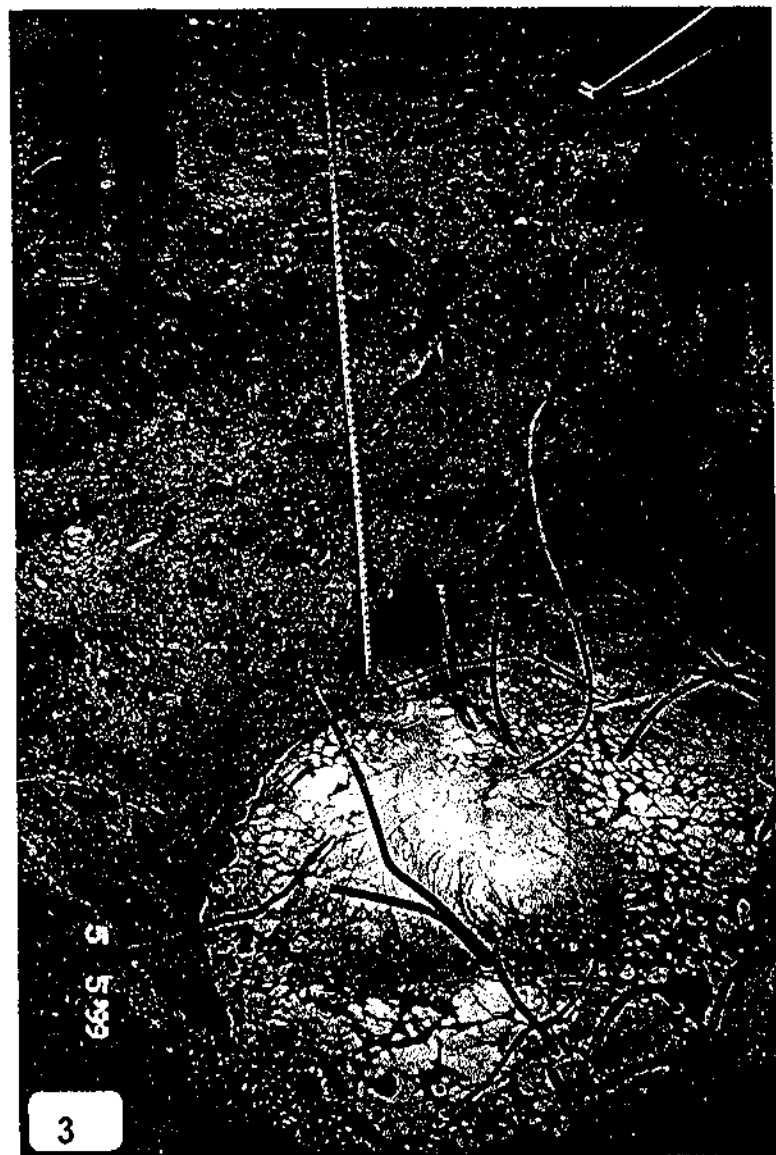
Date: May, 1999

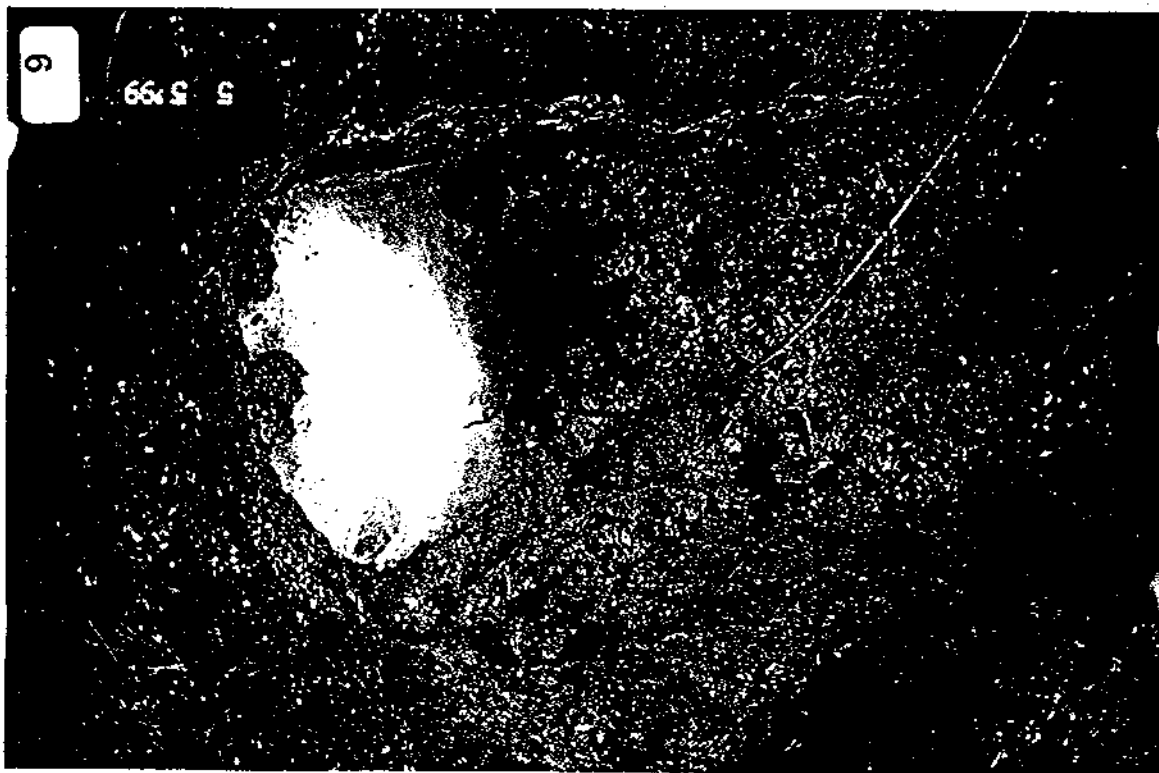
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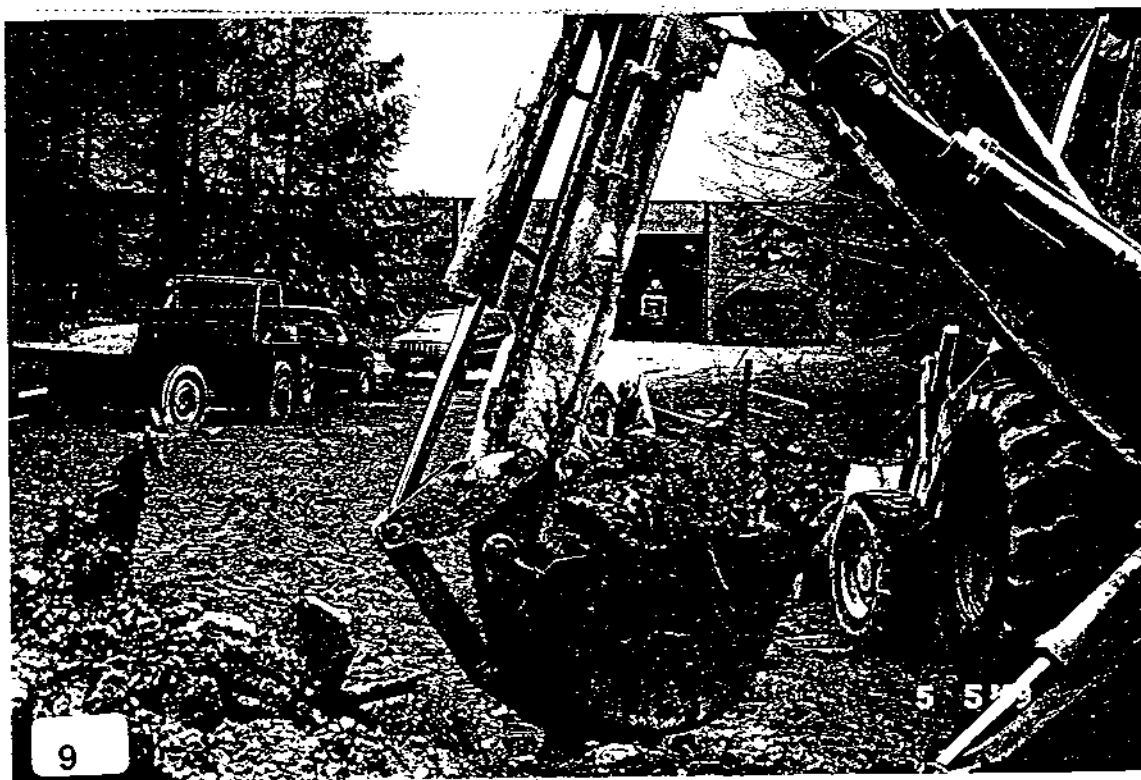
Luzenac America  
Photograph Log  
Ludlow, Vermont Tank Investigation

*Note: All number stickers are in lower left corner of photograph for orientation.*

Photo #	Description:
1	Former tank location and "plateau".
2	Test pit excavation number 1.
3	Test pit excavation number 1.
4	Test pit excavation number 1.
5	Beginning test pit excavation number 2.
6	Test pit excavation number 2.
7	Soil and groundwater in test pit excavation number 2.
8	Test pit excavation number 2.
9	Soil from test pit excavation number 2.
10	Collecting soil sample from test pit excavation number 2.
11	Test pit excavation number 2.
12	Seep number 1.
13	Seep number 1.
14	Seep number 2.
15	Seep number 2.











## State of Vermont

Department of Fish and Wildlife  
Department of Forests, Parks and Recreation  
Department of Environmental Conservation  
State Geologist  
RELAY SERVICE FOR THE HEARING IMPAIRED  
1-800-253-0191 TDD>Voice  
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation  
Waste Management Division  
103 South Main Street/West Office  
Waterbury, Vermont 05671-0404  
(802) 241-3888  
FAX (802) 241-3296

June 15, 1999

Mr. Howard Clay  
Luzenac America, Inc.  
P.O. Box 680  
Windsor, Vermont 05089

RE: Contamination at Luzenac America  
Ludlow, Vermont  
SMS Site # 99-2619

Dear Mr. Howard Clay:

The Sites Management Section (SMS) has received the June 7, 1999 report by DSM Environmental which outlines the subsurface conditions for the above referenced site. The fieldwork was conducted by Ted Reeves, DSM Environmental on May 5, 1999. The report is dated June 7, 1999 and summarizes the degree and extent of contamination encountered. A site assessment was performed at the site following the discovery of a former cast-in-place reinforced concrete 120,000 gallon #2 fuel oil.

During the site activities, two test pits were dug and soil and groundwater samples were taken from test pit #2 to be analyzed for total petroleum hydrocarbons (TPH). 1,200 parts per million (ppm) of TPH was detected in the soil sample and 68 ppm TPH was detected in the groundwater sample. Samples were obtained from two seeps in the vicinity of the former tank. Both seep samples contained non-detect levels of TPH. The limits of soil contamination were not defined. All soil was used for backfill at the conclusion of the initial site investigation.

The DSM report noted that while digging the test pits, groundwater did have an oily odor to it, and a sheen was visible.

The possible receptors potentially affected include groundwater and surface water; however, the two seeps identified did not contain evidence of TPH, as indicated by laboratory analytical results.

Based on the report information, the SMS has determined additional work is necessary to determine the degree and extent of contamination. Therefore, the SMS requests that Luzenac America have their consultant perform the following:

- ☐ Further define the degree and extent of contamination to the soil and groundwater. A sufficient number of monitoring sites should be installed to adequately define the severity of site contamination. Samples should be analyzed by EPA Method 8021B.
- ☐ Assess the potential for contaminant impact on sensitive receptors. Base this update on all available information and include nearby surface water, wetlands, sensitive ecologic areas, or utility corridors.
- ☐ Determine the need for long-term treatment and/or monitoring that addresses groundwater contamination.
- ☐ Submit a summary report that outlines the work performed, as well as provides conclusions and recommendations. As appropriate include analytical data; a site map showing the location of any potential sensitive receptors, monitoring or sample locations; an area map; detailed well logs; and a groundwater contour map.

- ☐ With the Workplan or Expressway form, please submit a site location map at an approximate scale of 1:24000 showing the location of the site. Please include a scale, a north arrow, and the SMS site number. The purpose of this map is to enable the SMS to enter the site location into a Geographical Information Systems database.

Please have your consultant submit a preliminary work plan and cost estimate or a site investigation expressway notification form within fifteen days of your receipt of this letter, so it may be approved prior to the initiation of onsite work. Enclosed please find a list of consultants who perform this type of work as well as the brochure "*Selecting Your UST Cleanup Contractor*," which will help you in choosing an environmental consultant.

Based on current information, the underground storage tanks at Luzenac America are eligible for participation in the Petroleum Cleanup Fund (PCF). You must provide written proof to the SMS that you hold no other applicable insurance in order to receive reimbursement from the PCF. The owner or permittee must pay for the removal of the tank, and for the initial \$10,000.00 of the cleanup. The fund will reimburse the tank owner or permittee for additional eligible cleanup costs of up to \$1 million. All expenditures must be pre-approved by the Agency or performed in accordance with the "*Site Investigation Guidance*" expressway program. Please refer to the enclosed guidance document titled, "*Procedures for Reimbursement from the Petroleum Cleanup Fund*" for additional information concerning the PCF.

The Secretary of the Agency of Natural Resources reserves the right to seek cost recovery of fund monies spent at the Luzenac America site if the Secretary concludes that Luzenac America, Inc. is in significant violation of the Vermont Underground Storage Tank Regulations or the Underground Storage Tank statute (10 V.S.A., Chapter 59).

We realize this may be a lot to absorb and respond to. We are here to help make this process as effective and uncomplicated as possible. Please review the enclosed documents and call me with any questions you may have. I can be reached at (802) 241-3876.

Sincerely,



Chuck Schwer, Supervisor  
Sites Management Section

Enclosures (3)

cc: Ludlow Selectboard w/o enclosure  
DEC Regional Office w/o enclosure  
Ted Reeves, DSM Environmental w/o enclosure

lp/sites/992619/61499ltr.wpd





Luzenac America, Inc. • P.O. Box 680 • Windsor, VT 05089 • (802) 228-6408 • Fax: (802) 228-6410

June 25, 1999

Ms. Lynda Provencher  
State of Vermont  
Agency of Natural Resources  
Waste Management Division  
103 South Main Street  
Waterbury, VT. 05671-0404

RE: Luzenac America  
Ludlow Mill  
UST Site Investigation  
SMS Number 99-2619

Dear Ms. Provencher,

Luzenac America has received your letter dated June 15, 1999. It is our intention to retain DSM Environmental Services, Inc. of Ascutney, Vermont to continue the investigation efforts related to the discovery of the former oil tank on our property.

With respect to the investigation, Luzenac America wishes to participate in the Site Investigation Expressway Process. Enclosed, please find a copy of the Site Investigation Expressway Notification form.

Should you have any questions or comments concerning this investigation, the Expressway Notification or any other issue related to this investigation, please feel free to contact Ted Reeves at DSM (802-674-2840) or me at 802-228-6408.

Regards,

  
Howard S. Clay  
Environmental Coordinator

Cc: Ted Reeves -- DSM Environmental Services, Inc., w/enclosure  
Jeff Wennberg -- Ludlow Town Manager, w/enclosure  
Steve Mauney - Luzenac America, w/enclosure  
Dave Crouse - Luzenac America, w/enclosure  
Skip Hall - Luzenac America, w/enclosure



# State of Vermont

Department of Fish and Wildlife  
Department of Forests, Parks and Recreation  
Department of Environmental Conservation  
State Geologist  
Natural Resources Conservation Council  
RELAY SERVICE FOR THE HEARING IMPAIRED  
1-800-253-0191 TDD>Voice  
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation  
Hazardous Materials Management Division  
103 South Main Street/West Office  
Waterbury, Vermont 05671-0404  
(802) 241-3888  
FAX (802) 244-5141

## SITE INVESTIGATION EXPRESSWAY NOTIFICATION

Site Owner: LUZENAC AMERICA, INC.

Site Name, Town: LUZENAC AMERICA, LUDLOW MILL, LUDLOW, VERMONT

☒ Yes, this site will participate in the Site Investigation Expressway Process.

☐ No, this site will not participate in the Site Investigation Expressway Process.

If yes, please complete the checklist below:

✓ Contamination present in soils above action levels ☒ Yes ☐ No

If yes, summarize levels:

TPH LEVELS AT 1200 MG/KG IN ONE TEST PIT.

✓ Free product observed ☒ Yes ☐ No (sheen)

✓ Groundwater contamination observed ☒ Yes ☐ No

✓ Surface water contamination observed ☐ Yes ☒ No

✓ Suspected release of hazardous substances ☐ Yes ☒ No

If yes, please explain:

OLD #2 FUEL OIL

✓ Affected receptors ☒ Yes ☐ No

If yes, please identify receptors including names and addresses of third party receptors:

SOIL AND GROUNDWATER ONLY. ADJACENT GROUNDWATER  
SEEPS DO NOT EXHIBIT EVIDENCE OF CONTAMINATION AT  
THIS TIME. NO THIRD PARTY RECEPTORS.

Please provide an estimated date of when you expect to submit Site Investigation Report: 10/1/99

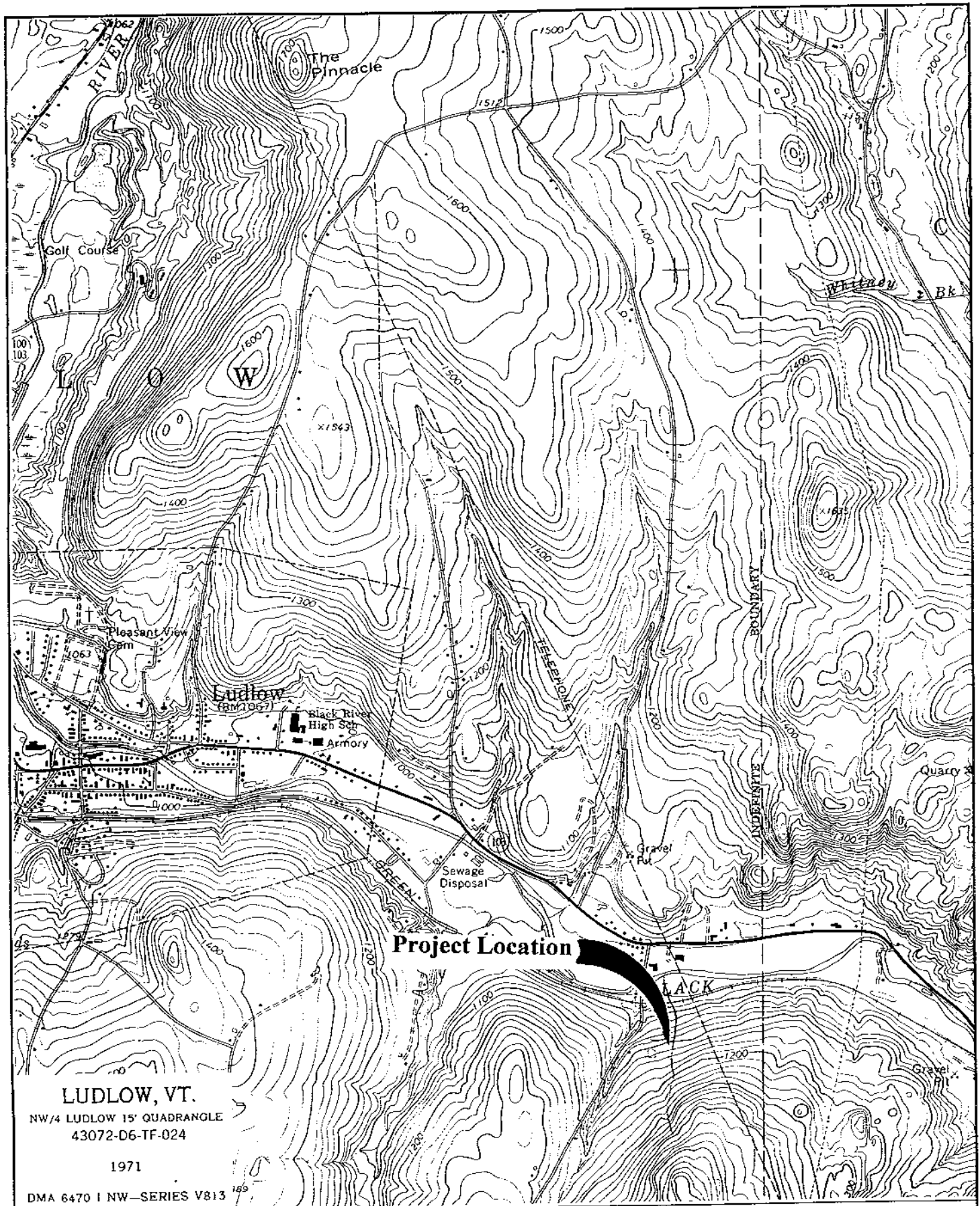
Luzenac America Ludlow Mill  
UST Site Investigation  
Appendix B  
List of Adjacent Landowners

Luzenac America Ludlow Mill  
UST Site Investigation

**ADJOINING LANDOWNERS**

<b>Map No.</b>	<b>Property No.</b>	<b>Landowner Name</b>	<b>Landowner Address</b>
0702	16	Luzenac America	PO Box 680; Windsor, VT 05089
0702	17	Luzenac America	PO Box 680; Windsor, VT 05089
0702	18	Luzenac America	PO Box 680; Windsor, VT 05089
0702	19	Luzenac America	PO Box 680; Windsor, VT 05089
0702	20	Luzenac America	PO Box 680; Windsor, VT 05089
0702	21	Beverly Butler	1.5 Thompson Ave., Ludlow, VT 05149
0702	22	Luzenac America	PO Box 680; Windsor, VT 05089
0702	23	Luzenac America	PO Box 680; Windsor, VT 05089
0702	24	Luzenac America	PO Box 680; Windsor, VT 05089
0702	28	Luzenac America	PO Box 680; Windsor, VT 05089
0702	29	Luzenac America	PO Box 680; Windsor, VT 05089
0702	Railroad Right-of-way	State of Vermont, VAOT, R.R. Division	133 State Street, Montpelier, VT 05602

Luzenac America Ludlow Mill  
UST Site Investigation:  
Appendix C  
Locus, Site and Groundwater Maps



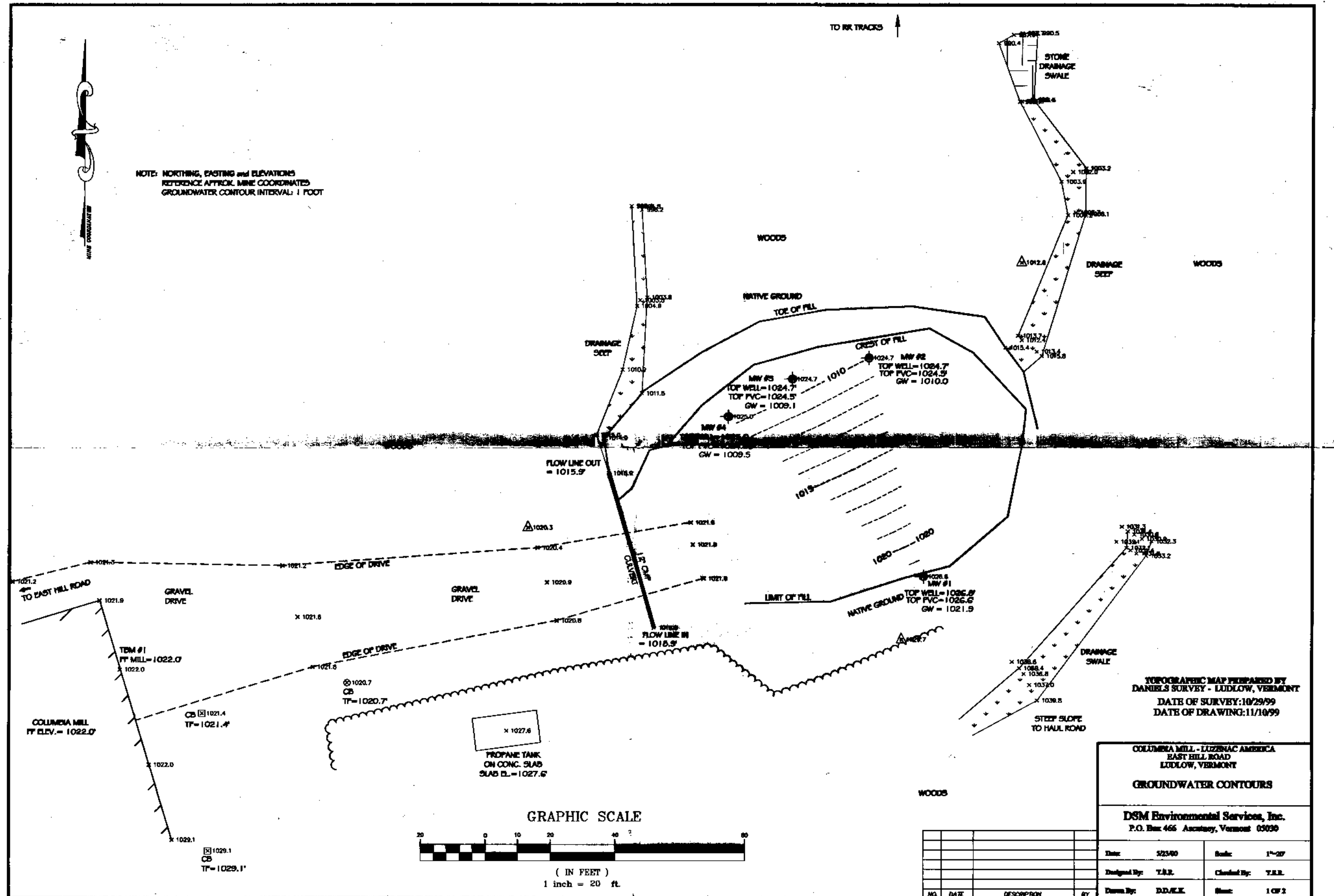
DSM ENVIRONMENTAL SERVICES, INC.

DRAWN BY: T. Reeves

Date: May, 1999

No Scale

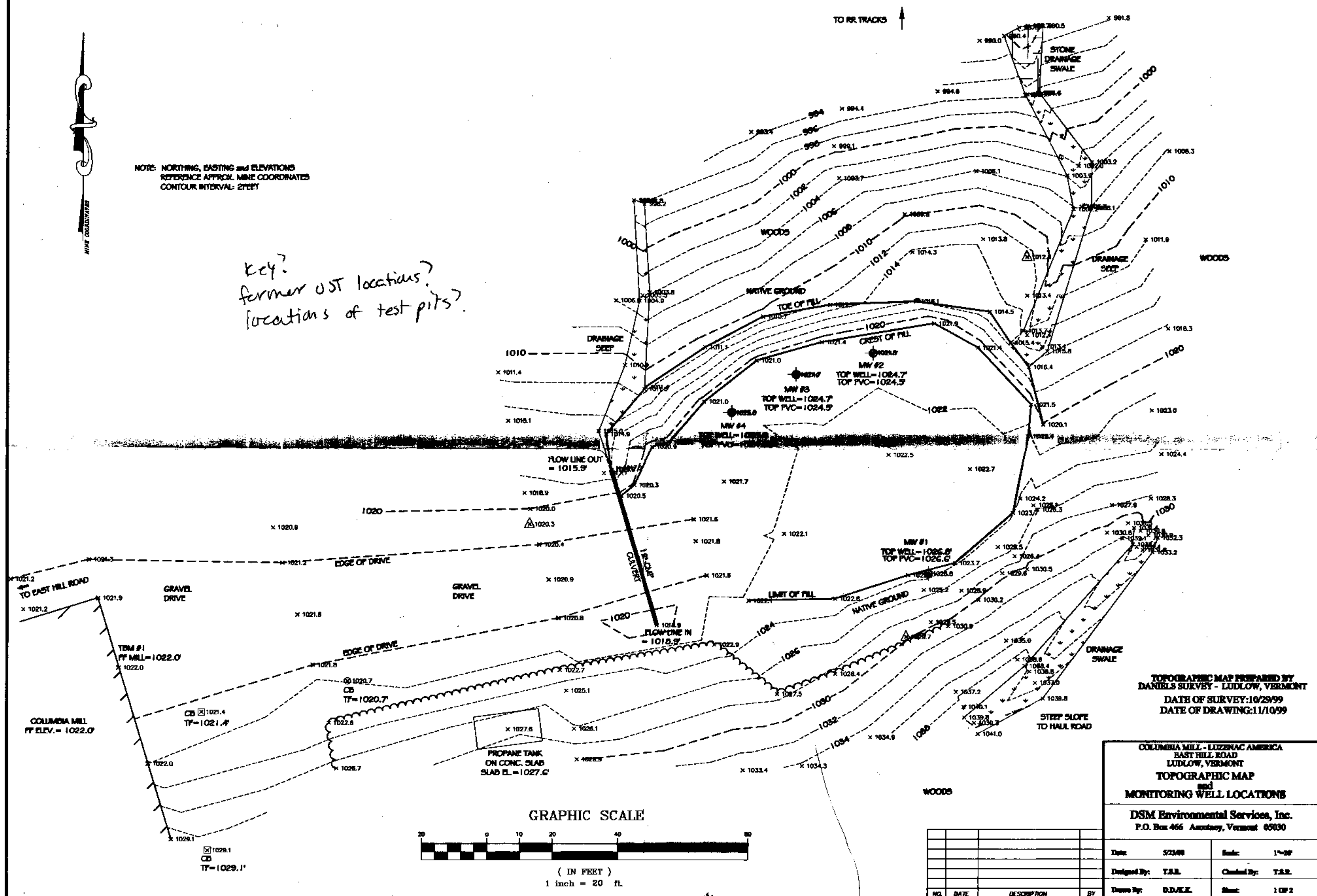
Locus Plan  
Luzenac UST Site  
Ludlow, Vermont





NOTE: NORTHING, EASTING and ELEVATIONS  
REFERENCE APPROX. MINE COORDINATES  
CONTOUR INTERVAL: 2 FEET

key?  
former OST locations?  
locations of test pits?



TOPOGRAPHIC MAP PREPARED BY  
DANIELS SURVEY - LUDLOW, VERMONT  
DATE OF SURVEY: 10/29/99  
DATE OF DRAWING: 11/10/99

COLUMBIA MILL - LUZENC AMERICA  
EAST HILL ROAD  
LUDLOW, VERMONT  
TOPOGRAPHIC MAP  
and  
MONITORING WELL LOCATIONS

DSM Environmental Services, Inc.  
P.O. Box 466 Ludlow, Vermont 05030

Date:	5/23/00	Scale:	1"=20'
Designed By:	T.S.R.	Checked By:	T.S.R.
Drawn By:	D.D.A.K.	Sheet:	1 OF 2

NO.	DATE	DESCRIPTION	BY

GRAPHIC SCALE



( IN FEET )  
1 inch = 20 ft.



Luzenac America Ludlow Mill  
UST Site Investigation  
Appendix D  
MSDS for #2 Fuel Oil

CITGO PETROLEUM -- NO 2 FUEL OILS, DIESEL FUELS-ALL GRADES, 1763  
MATERIAL SAFETY DATA SHEET  
NSN: 915000N060728  
Manufacturer's CAGE: 12518  
Part No. Indicator: A  
Part Number/Trade Name: NO 2 FUEL OILS, DIESEL FUELS-ALL GRADES, 1763

=====  
General Information  
=====

Company's Name: CITGO PETROLEUM CORP  
Company's P. O. Box: 3758  
Company's City: TULSA  
Company's State: OK  
Company's Country: US  
Company's Zip Code: 74102  
Company's Emerg Ph #: 800-424-9300 (CHEMTREC)  
Company's Info Ph #: 918-495-5933  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SMJ  
Date MSDS Prepared: 11NOV94  
Safety Data Review Date: 14JUN95  
MSDS Serial Number: BXWZC

=====  
Ingredients/Identity Information  
=====

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: HIGH SULFUR FUEL OIL/DIESEL FUEL:RED LIQ, PETROL  
ODOR. LOW SULFUR FUEL (SUP DAT)  
Boiling Point: >342F,>172C  
Melting Point: N/A  
Vapor Density (Air=1): >1  
Specific Gravity: 0.87 (H\*20=1)  
Evaporation Rate And Ref: <1 (BUTYL ACETATE=1)  
Solubility In Water: NEGLIGIBLE

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: >126F,>52C  
Flash Point Method: CC  
Extinguishing Media: CO\*2, DRY CHEMICAL, FOAM, WATER FOG.  
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL  
PROTECTIVE EQUIPMENT (FP N).  
Unusual Fire And Expl Hazrds: MATERIAL IS HIGHLY VOLATILE AND EMITS VAPORS  
WHICH MAY BE IGNITED BY OTHER IGNITION SOURCES.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): HEAT, FLAME.  
Materials To Avoid: CAUSTICS, OXIDIZING AGENTS AND STRONG ACIDS.  
Hazardous Decomp Products: CO\*2, (CO UNDER INCOMPLETE COMBUSTION).  
Hazardous Poly Occur: NO  
Conditions To Avoid (Poly): NOT RELEVANT

=====  
Health Hazard Data  
=====

LD50-LC50 Mixture: SEE INGREDIENTS  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: YES  
Route Of Entry - Ingestion: YES  
Health Haz Acute And Chronic: LOW HAZ UNDER AMBIENT CNDTNS. VAPS, MISTS &  
FUMES HAZ. NORMALLY OF LOW TOX EXCEPT ON INGEST, IF MISTING OCCURS/DERM

ABSORP. ACUTE:INHAL:MISTS/FUMES ABOVE TLV MAY CAUSE TRANSIENT EUPHORIA, RESP & GI IRRIT, HDCH, DIZZ, CNS & GENERALIZED DEPRESS, COMA, PARTICULARLY IN OXYG-DEFICIENT ATM. PULM IRRIT. SKIN:(EFTS OF OVEREXP)

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT

Signs/Symptoms Of Overexp: HLTH HAZS:MILD TEMP IRRIT. EYES:MILD TO MOD IRRIT. INGEST:TOX DOSE:1 OZ TO 1 PINT FOR HUMAN ADULT. SYMPS INCLUDE BURNING OF MOUTH & UPPER GI TRACT, VOMIT & DIARR. LESS THAN 1 OZ W/ RETENTION MAY PRDCE GEN DEPRESS, SEDATION, RESP & CARDIAC INSUFFICIENCY & COMA. INJECTION:IRRIT, ERYTHEMA, EDEMA. CHRONIC:PRLNGD, (ING 10)

Med Cond Aggravated By Exp: PRE-EXISTING DERMATOSIS.

Emergency/First Aid Proc: INHAL:REMOVE FROM EXPOS, SEEK IMMED MED AID. SKIN:WASH W/SOAP & WATER. DO NOT WEAR HEAVILY CONTAM CLTHG BEFORE CLEANING. EYES:FLUSH W/LG VOLS OF TEPID WATER FOR @ LST 15 MIN. INGEST:DO NOT INDUCE VOMIT. SEEK MED AID. INJECTION:SEEK IMMED MED AID. NOTE TO MD:THIS IS LOW VISCOSITY MATL, W/SAYBOLT VISCOSITY @ 100F OF 32.6-40 SUS. IF INGEST & VOMIT OCCURS, THERE EXISTS HIGH PULM ASPIR HAZ, (SUP DAT)

#### Precautions for Safe Handling and Use

Steps If Matl Released/Spill: REMOVE SOURCES OF IGNIT, VENT AREA. SM SPILLS:TAKE UP W/NONCOMBUST ABOSRB SUCH AS FULLERS EARTH/SAND. PLACE INTO CNTNRS FOR LATER DISP. LG SPILLS:CNTN SPILL IN EARTHENDIKES FOR LATER RECOVERY. CTL IGNIT SOURCES AROUND SPILL AREA. FIRE-FIGHT (ING 4)

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISP MUST BE I/A/W FED, STATE & LOC REGS(FPN). IT IS RESPONSIBILITY OF USER TO DETERM IF MATL IS HAZ WASTE AT TIME OF DISP. CHECK BEFORE DISPOSING TO BE SURE YOU ARE IN COMPLIANCE W/ALL APPLIC LAWS & REGS. RCRA EMER HOTLINE #:800-424-9346.

Precautions-Handling/Storing: KEEP CNTNR TIGHTLY CLSD & AWAY FROM HEAT & FLAME. DO NOT STORE W/STRONG OXIDIZERS. CAUTN:COMBUST LIQ. DO NOT INHALE VAPS, FUMES/MISTS. PVNT DERM CONT.

Other Precautions: CAUTN:EMPTY CNTNRS MAY CNTN PROD RESIDUE WHICH COULD INCLUDE FLAM/EXPLO VAPS. CONSULT FED, STATE & LOC AUTHS BEFORE REUSING, RECDNTNING, RECLAIMING, RECYCLING/DISP OF EMPTY CNTNRS &/OR WASTE RESIDUES OF PROD. PROT MEASURES DURING (ING 7)

#### Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED ORGANIC RESPIRATOR ABOVE THE TLV'S.

Ventilation: USE IN WELL VENT AREA. IN CONFINED SPACES, MECH VENT MAY BE REQ TO KEEP LEVELS OF CERTAIN COMPONENTS BELOW (ING 9)

Protective Gloves: OIL IMPERVIOUS GLOVES.

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS &(SUPDAT)

Other Protective Equipment: ANSI APPRVD EMER EYE WASH & DELUGE SHOWER (FP N). WEAR BODY-COVERING WORK CLTHS TO AVOID PRLNGD/RPTD EXPOS.

Work Hygienic Practices: WASH EXPOSED SKIN THOROUGHLY WITH SOAP AND WATER. LAUNDER SOILED WORK CLOTHES BEFORE REUSE.

Suppl. Safety & Health Data: APPEAR & ODOR:OIL/DIESEL FUEL:WATER WHITE TO LEMON LIQ, PETROL ODOR. FIRST AID PROC:POSS INDUCING LIPOID PNEUM. FOR QTYS >FEW DROPS, USE CAREFUL GASTRIC LAVAGE W/TIGHT FITTING, CUFFED ENDOTRACHEAL TUBE. EYE PROT:FULL LENGTH FACE SHIELD (FP N).

#### Transportation Data

#### Disposal Data

#### Label Data

Label Required: YES

Technical Review Date: 14JUN95

Label Status: G

Common Name: NO 2 FUEL OILS, DIESEL FUELS-ALL GRADES, 1763

Chronic Hazard: YES

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Moderate: X

Fire Hazard-Moderate: X

Reactivity Hazard-None: X

Special Hazard Precautions: FLAMMABLE. ACUTE:INHAL:MISTS/FUMES ABOVE TLV MAY CAUSE TRANSIENT EUPHORIA, RESP & GI IRRIT, HDCH, DIZZ, CNS & GENERALIZED DEPRESS, COMA, PARTICULARLY IN OXYG-DEFICIENT ATM. SKIN:MILD TEMPORARY IRRIT. EYE:MILD TO MOD IRRIT. INGEST:TOX DOSE:1 OZ TO 1 PINT FOR HUMAN ADULT. SYMPS INCLUDE BURNING OF MOUTH & UPPER GI TRACT, VOMITING AND DIARRHEA. LESS THAN 1 OZ WITH RETENTION MAY PRODUCE GENERAL DEPRESSION, SEDATION, RESP & CARDIAC INSUFFICIENCY & COMA. INJECTION:IRRIT, ERYTHEMA, EDEMA. CHRONIC:PRLNGD, RPTD DERM CONT MAY CAUSE DRYING, CRACKING, DERMATOSES. DIESEL EXHST MAY BE CONSIDERED POTNTL CANCER HAZ. TARGET ORGANS:LUNGS, CNS (DEPRESSANT).

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: CITGO PETROLEUM CORP

Label P.O. Box: 3758

Label City: TULSA

Label State: OK

Label Zip Code: 74102

Label Country: US

Label Emergency Number: 800-424-9300 (CHEMTREC)

Luzenac America Ludlow Mill  
UST Site Investigation  
Appendix E  
NRCS Soil Mapping and Description

NY-62-1138-1



U. S. Department of Agriculture  
— Natural Resources Conservation Service  
Cooperating with  
State Agricultural Experiment Station

$$\begin{array}{c} \uparrow \\ -N- \\ \downarrow \end{array}$$

1" = 1500  
Approximate Scale

USDA - NRCS - Fort Worth, Texas

Soil Survey Field Sheet  
Windsor County, Vermont  
Advance Copy - Subject To Change  
Survey has not been compiled nor correlated  
Names may be changed and areas may be combined

**11C - 11E map units: *Marlow fine sandy loam***

These units consist of very deep, well drained basal till soils. Stones cover up to 3 percent of the surface and are typically 5 to 25 feet apart. The major difference between these soil map units and map units 10C and 10D is the number of surface stones present. The stony phase of Marlow soils is generally located on steeper slopes or wooded landscapes. The Marlow soils are geographically associated with well drained Berkshire, Monadnock and Tunbridge soils, moderately well drained Peru and Skerry soils, and poorly drained Cabot soils. Marlow soils have moderately slow or slow permeability in the substratum while Berkshire and Monadnock soils have moderate or moderately rapid permeability. Marlow soils are very deep while Tunbridge soils are moderately deep to bedrock. Marlow soils have less gray in the B horizons than Cabot soils. Marlow soils do not have redoximorphic features in or immediately below the spodic horizon while Peru and Skerry soils do.

The typical sequence, depth, and composition of the layers of this soil are as follows:

Surface layer:

Surface to 5 inches, very dark grayish brown fine sandy loam

Subsurface layer:

5 to 8 inches, light brownish gray fine sandy loam

Subsoil:

8 to 13 inches, brown fine sandy loam

13 to 25 inches, dark yellowish brown fine sandy loam

25 to 30 inches, olive brown fine sandy loam

Substratum:

30 to 65 inches, olive, very firm fine sandy loam

Included in the mapping of these units are areas of very stony soils, well drained Berkshire, Monadnock and Tunbridge soils, poorly drained Cabot soils, and moderately well drained Peru and Skerry soils. Very stony soils are scattered throughout the unit. Cabot, Peru and Skerry soils are in depressions and drainageways. Tunbridge soils are on knolls near rock outcrops. Berkshire and Monadnock soils are in positions similar to Marlow soils. These areas make up about 15 percent of the unit.

Important soil properties

Permeability: moderate over moderately slow to slow

Available water capacity: moderate

Depth to bedrock: greater than 60 inches

Depth to seasonal high water table: 2.0 to 3.5 feet

Potential frost action: moderate

Hydrologic group: C

Luzenac America Ludlow Mill  
UST Site Investigation  
Appendix F  
Boring Logs/Well Construction Logs



## M &amp; W Soils Engineering Inc.

Main St.

Charlestown, NH 03603

SHEET 1 OF 1

DATE 8/5/99

HOLE NO. MW-1

LINE &amp; STA.

OFFSET

TO DSM ENVIRONMENTAL SERVICES, INC.

ADDRESS ASCUTNEY, VT

PROJECT NAME LUZENAC-AMERICA

LOCATION LUDLOW, VT

REPORT SENT TO TED REEVES

PROJ. NO.

SAMPLES RETAINED BY DSM ENVIRONMENTAL

OUR JOB NO. 7843-99

GROUND WATER OBSERVATIONS		CASING		SAMPLER	CORE BAR	SURFACE ELEV.
AT 3'9"	AT IMMEDIATELY	HOURS	Type	HSA	SS	DATE STARTED 8/5/99
AT	AT	HOURS	Size I. D.	4 1/4"	1 1/2"	DATE COMPL. 8/5/99
			Hammer Wt.		140#	BORING FORMAN M.D. & C.C.
			Hammer Fall		30"	INSPECTOR T. REEVES
						SOILS ENGR.

## LOCATION OF BORING UPGRADE WELL SITE

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler	MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect	SAMPLE NO. PEN REC		
5'	5' - 7'	SS	15 16	25 47	DENSE	LIGHT BROWN GRAVELLY SILTY FINE SANDS WITH COBBLES	1	24"	18"
10'					7'	REFUSAL - BEDROCK OR BOULDER			
						SET WELL TOP OF WELL AT 3' BOTTOM OF WELL AT 7' SILICA SANDS PLACED FROM 3' TO 7' BENTONITE SEAL FROM 2' TO 3'			
						<b>MATERIALS USED:</b> 4' OF 2" PVC 0.010" SLOT SCREEN 6' OF 2" PVC SOLID 12# OF BENTONITE CHIPS 75# OF SAND 40# OF CEMENT MIX 1 2" PVC SLIDE CAP 1 2" EXPANSION CAP 1 5' BY 4" STICKUP WITH LOCK			

GROUND SURFACE TO 7'

USED HSA

CASING THEN DROVE SS 24"

## Sample Type

D-Dry C-Cored W-Washed.

UP-Unfinished Piston

TP-Test Pit A-Auger V-Vane Tes

UT-Undisturbed Thinwall

## Proportions Used

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140 lb. wt. x 30"-fall an 2" O.D. Sampler

Cohesionless Density

0-10 Loose

10-30 Med. Dense

30-50 Dense

50+ Very Dense

Cohensive Consistency

0-4 Soft 30 + Hard

4-8 M/Stiff

8-15 Stiff

15-30 V-Stiff

## summary

EARTH BORING 7'

ROCK CORING

SAMPLES 1

HOLE NO. MW-1

# M & W Soils Engineering Inc.

Main St.

Charlestown, NH 03603

TO DSM ENVIRONMENTAL SERVICES, INC.

ADDRESS ASCUTNEY, VT

PROJECT NAME LUZENAC-AMERICA

LOCATION LUDLOW, VT

REPORT SENT TO TED REEVES

PROJ. NO.

SAMPLES RETAINED BY DSM ENVIRONMENTAL

OUR JOB NO. 7843-99

SHEET 1 OF 1  
DATE 8/5/99  
HOLE NO. MW-2  
LINE & STA.  
OFFSET

GROUND WATER OBSERVATIONS		CASING SAMPLER CORE BAR		SURFACE ELEV.	
AT DRY	AT IMMEDIATELY	HOURS	Type HSA	SS	DATE STARTED 8/5/99
AT	AT	HOURS	Size I. D. 4 1/4"	1 1/2"	DATE COMPL. 8/5/99
			Hammer Wt. 140#	BIT	BORING FORMAN M.D. & C.C.
			Hammer Fall 30"		INSPECTOR T. REEVES
					SOILS ENGR.

LOCATION OF BORING EDGE OF BANK

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler	MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect	SAMPLE NO. PEN REC		
5'	5' - 7'	SS	20 11	18 12	MED. DENSE	BROWN SILTY FINE SANDS WITH ROOTS AND PIECES OF WOOD (FILL) BOULDERS	1	24"	18"
10'	10' - 12'	SS	15 35	39 56	DENSE	OLD GROUND DARK BROWN GRAVELLY SILTY SANDS (OILY)	2	24"	12"
15'					VERY DENSE	OLIVE BROWN GRAVELLY SILTY TILL			
						SET WELL TOP OF WELL AT 4' BOTTOM OF WELL AT 12' SILICA SANDS PLACED FROM 3' TO 12' BENTONITE SEAL FROM 2' TO 3'			
						MATERIALS USED: 8' OF 2" PVC 0.010" SLOT SCREEN 4' OF 2" PVC SOLID 12# OF BENTONITE CHIPS 150# OF SAND 40# OF CEMENT MIX 1 2" PVC SLIDE CAP 1 2" EXPANSION CAP 1 5' BY 4" STICKUP WITH LOCK			

GROUND SURFACE TO 13'

USED HSA CASING THEN

## Sample Type

D-Dry C-Cored W-Washed

UP-Unfinished Piston

TP-Test Pit A-Auger V-Vane Test

UT-Undisturbed Thinwall

## Proportions Used

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140 lb. wt. x 30"-fall an 2" O.D. Sampler

Cohesionless Density

0-10 Loose

10-30 Med. Dense

30-50 Dense

50+ Very Dense

Cohesive Consistency

0-4 Soft 30 + Hard

4-8 M/Stiff

8-15 Stiff

15-30 V-Stiff

## summary

EARTH BORING 13'

ROCK CORING

SAMPLES 2

HOLE NO. MW-2

**M & W Soils Engineering Inc.**

Main St. Charlestown, NH 03603

TO DSM ENVIRONMENTAL SERVICES, INC. ADDRESS ASCUTNEY, VT  
 PROJECT NAME LUZENAC-AMERICA LOCATION LUDLOW, VT  
 REPORT SENT TO TED REEVES PROJ. NO. \_\_\_\_\_  
 SAMPLES RETAINED BY DSM ENVIRONMENTAL OUR JOB NO. 7843-99

SHEET 1 OF 1  
 DATE 8/5/99  
 HOLE NO. MW-3  
 LINE & STA. \_\_\_\_\_  
 OFFSET \_\_\_\_\_

GROUND WATER OBSERVATIONS				Type		CASING		SAMPLER		CORE BAR		SURFACE ELEV.	
AT <u>DRY</u> AT <u>IMMEDIATELY</u> HOURS				Size I. D.		<u>4 1/4"</u>		<u>1 1/2"</u>				DATE STARTED <u>8/5/99</u>	
AT _____ AT _____ HOURS				Hammer Wt.				<u>140#</u>		BIT		DATE COMPL. <u>8/5/99</u>	
				Hammer Fall				<u>30"</u>				BORING FORMAN <u>M.D. &amp; C.C.</u>	
												INSPECTOR <u>T. REEVES</u>	
												SOILS ENGR.	

**LOCATION OF BORING**

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler		MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect	SAMPLE		
								NO.	PEN	REC
5'					MED. DENSE		TALC - GRAVELLY FINE SANDS WITH COBBLES AND BOULDERS			
	5' - 7'	SS	20	10				1	24"	18"
			6	8						
10'					MED. DENSE MOIST	9'6"	(FILL) OILY SOILS OLD GROUND			
	10' - 12'	SS	10	11				2	24"	20"
			14	13						
15'						14'	BROWN GRAVELLY SILTS WITH WET FINE SAND LAYERS			
	15' - 17'	SS	14	17				3	24"	24"
			32	35						
20'							SET WELL TOP OF WELL AT 4' BOTTOM OF WELL AT 14' SILICA SANDS PLACED FROM 3' TO 14' BENTONITE SEAL FROM 2' TO 3'  MATERIALS USED: 10' OF 2" PVC 0.010" SLOT SCREEN 7' OF 2" PVC SOLID 25# OF BENTONITE CHIPS 250# OF SAND 40# OF CEMENT MIX 1 2" PVC SLIDE CAP 1 2" EXPANSION CAP 1 5' BY 4" STICKUP WITH LOCK			

GROUND SURFACE TO 17'

USED HSA CASING THEN \_\_\_\_\_

**Sample Type**

D-Dry C-Cored W-Washed,  
 UP-Unfinished Piston  
 TP-Test Pit A-Auger V-Vane Test  
 UT-Undisturbed Thinwall

Proportions Used  
 trace 0 to 10%  
 little 10 to 20%  
 some 20 to 35%  
 and 35 to 50%

140 lb. wt. x 30"-fall an 2" O.D. Sampler  
 Cohesionless Density  
 0-10 Loose  
 10-30 Med. Dense  
 30-50 Dense  
 50+ Very Dense  
 Cohesive Consistency  
 0-4 Soft 30 + Hard  
 4-8 M/Stiff  
 8-15 Stiff  
 15-30 V-Stiff

**summary**

EARTH BORING 17'  
 ROCK CORING \_\_\_\_\_  
 SAMPLES 3  
 HOLE NO. MW-3

**M & W Soils Engineering Inc.**

Main St. Charlestown, NH 03603

TO DSM ENVIRONMENTAL SERVICES, INC.

ADDRESS ASCUTNEY, VT

PROJECT NAME LUZENAC-AMERICA

LOCATION LUDLOW, VT

REPORT SENT TO TED REEVES

PROJ. NO.

SAMPLES RETAINED BY DSM ENVIRONMENTAL

OUR JOB NO. 7843-99

SHEET 1 OF 1

DATE 8/5/99

HOLE NO. MW-4

LINE & STA.

OFFSET

GROUND WATER OBSERVATIONS		CASING		SAMPLER	CORE BAR	SURFACE ELEV.	
AT	DRY	AT	IMMEDIATELY	HOURS	Type	HSA	SS
		Size I. D.		4	1/4"	1	1/2"
		Hammer Wt.			140#	BIT	
		Hammer Fall			30"		
AT		AT		HOURS		DATE STARTED 8/5/99	
						DATE COMPL. 8/5/99	
						BORING FORMAN M.D. & C.C.	
						INSPECTOR T. REEVES	
						SOILS ENGR.	

**LOCATION OF BORING**

Depth	SAMPLE DEPTHS FROM-TO	TYPE OF SAMPLE	Blows per 6" on sampler	MOISTURE DENSITY OR CONSIST.	STRATA CHANGE ELEV.	FIELD SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, cond., hardness, Drilling time, seams and ect.	SAMPLE		
							NO.	PEN	REC
5'									
	5' - 7'	SS	11	5	MED. DENSE	BROWN TALC WITH COBBLES AND FINE SAND (FILL)	1	24"	18"
			7	7					
10'					9'	OLD GROUND			
	10' - 12'	SS	7	12			2	24"	20"
			14	15					
15'					DENSE	OLIVE BROWN GRAVELLY SILTS (TILL)			
	15' - 17'	SS	14	27			3	24"	24"
			50	30					
20'					16'	SET WELL TOP OF WELL AT 6' BOTTOM OF WELL AT 16' SILICA SANDS PLACED FROM 4' TO 16' BENTONITE SEAL FROM 3' TO 4'			
						MATERIALS USED: 10' OF 2" PVC 0.010" SLOT SCREEN 10' OF 2" PVC SOLID 12# OF BENTONITE CHIPS 250# OF SAND 40# OF CEMENT MIX 1 2" PVC SLIDE CAP 1 2" EXPANSION CAP 1 5' BY 4" STICKUP WITH LOCK			

GROUND SURFACE TO 17'

USED HSA

CASING THEN

**Sample Type**

D-Dry C-Cored W-Washed

UP-Unfinished Piston

TP-Test Pit A-Auger

UT-Undisturbed Thinwall

**Proportions Used**

trace 0 to 10%

little 10 to 20%

some 20 to 35%

and 35 to 50%

140 lb. wt. x 30"-fall an 2" O.D. Sampler

Cohesionless Density

0-10 Loose

10-30 Med. Dense

30-50 Dense

50+ Very Dense

Cohesive Consistency

0-4 Soft 30 + Hard

4-8 M/Stiff

8-15 Stiff

15-30 V-Stiff

**summary**

EARTH BORING 17'

ROCK CORING

SAMPLES 1

HOLE NO. MW-4

Luzenac America Ludlow Mill  
UST Site Investigation  
Appendix G  
Laboratory Analysis Results



## eastern analytical

*professional laboratory services*

Ted Reeves  
DSM Environmental Services, Inc.  
Thrasher Road, Rt.5  
Ascutney, VT 05030

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 18031 DSM  
Client Identification: Luzenac Ludlow  
Date Received: 8/18/99

Dear Mr. Reeves :

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

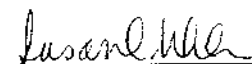
The following standard abbreviations and conventions apply throughout all Eastern Analytical, Inc. reports:

< = "less than" followed by the reporting limit  
TNR = Testing Not Requested  
ND = None Detected, no established detection limit  
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

  
Susan C. Uhler, Lab Director

8/26/99  
Date



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18031

Client: DSM Environmental Services,

Client Designation: Luzenac Ludlow

Inc.

Sample ID:	MW-1	MW-4	SEEP EAST	SEEP WEST	081799
Analytical Type:	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/17/99	8/17/99	8/17/99	8/17/99	8/17/99
Date Received:	8/18/99	8/18/99	8/18/99	8/18/99	8/18/99
Units:	µg/l	µg/l	µg/l	µg/l	µg/l
Date of Analysis:	8/19/99	8/19/99	8/19/99	8/19/99	8/20/99
Analyst:	VG	VG	VG	VG	VG
Method:	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1

Dichlorodifluoromethane	< 5	< 5	< 5	< 5	< 5
Chloromethane	< 2	< 2	< 2	< 2	< 2
Vinyl chloride	< 2	< 2	< 2	< 2	< 2
Bromomethane	< 2	< 2	< 2	< 2	< 2
Chloroethane	< 5	< 5	< 5	< 5	< 5
Trichlorofluoromethane	< 5	< 5	< 5	< 5	< 5
Diethyl ether	< 5	< 5	< 5	< 5	< 5
Acetone	< 10	< 10	< 10	< 10	20
1,1-Dichloroethene	< 1	< 1	< 1	< 1	< 1
Methylene chloride	< 5	< 5	< 5	< 5	< 5
Carbon disulfide	< 5	< 5	< 5	< 5	< 5
Methyl-t-butyl ether(MTBE)	< 10	< 10	< 10	< 10	< 10
trans-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	< 2	< 2	< 2	< 2	< 2
2,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2
cis-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2
2-Butanone(MEK)	< 10	< 10	< 10	< 10	< 10
Bromochloromethane	< 2	< 2	< 2	< 2	< 2
Tetrahydrofuran(THF)	< 10	< 10	< 10	< 10	< 10
Chloroform	< 2	< 2	< 2	< 2	< 2
1,1,1-Trichloroethane	< 2	< 2	< 2	< 2	< 2
Carbon tetrachloride	< 2	< 2	< 2	< 2	< 2
1,1-Dichloropropene	< 2	< 2	< 2	< 2	< 2
Benzene	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	< 2	< 2	< 2	< 2	< 2
Trichloroethene	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2
Dibromomethane	< 2	< 2	< 2	< 2	< 2
Bromodichloromethane	< 2	< 2	< 2	< 2	< 2
4-Methyl-2-pentanone(MIBK)	< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2
Toluene	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2
1,1,2-Trichloroethane	< 2	< 2	< 2	< 2	< 2
2-Hexanone	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	< 2	< 2	< 2	< 2	< 2
1,3-Dichloropropane	< 2	< 2	< 2	< 2	< 2
Dibromochloromethane	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane	< 2	< 2	< 2	< 2	< 2
Chlorobenzene	< 2	< 2	< 2	< 2	< 2
1,1,1,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18031

Client: DSM Environmental Services,  
Inc.

Client Designation: Luzenac Ludlow

Sample ID:	MW-1	MW-4	SEEP EAST	SEEP WEST	081799
Analytical Type:	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/17/99	8/17/99	8/17/99	8/17/99	8/17/99
Date Received:	8/18/99	8/18/99	8/18/99	8/18/99	8/18/99
Units:	µg/l	µg/l	µg/l	µg/l	µg/l
Date of Analysis:	8/19/99	8/19/99	8/19/99	8/19/99	8/20/99
Analyst:	VG	VG	VG	VG	VG
Method:	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1
1,1,1,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2
Ethylbenzene	< 1	< 1	< 1	< 1	< 1
mp-Xylene	< 1	< 1	< 1	< 1	< 1
o-Xylene	< 1	< 1	< 1	< 1	< 1
Styrene	< 1	< 1	< 1	< 1	< 1
Bromoform	< 2	< 2	< 2	< 2	< 2
iso-Propylbenzene	< 1	< 1	< 1	< 1	< 1
Bromobenzene	< 2	< 2	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2
1,2,3-Trichloropropane	< 2	< 2	< 2	< 2	< 2
n-Propylbenzene	< 1	< 1	< 1	< 1	< 1
2-Chlorotoluene	< 2	< 2	< 2	< 2	< 2
4-Chlorotoluene	< 2	< 2	< 2	< 2	< 2
1,3,5-Trimethylbenzene	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1
p-isopropyltoluene	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	< 2	< 2	< 2	< 2	< 2
1,2,4-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene	< 1	< 1	< 1	< 1	< 1
Naphthalene	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1





# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18031

Client: DSM Environmental Services, Inc.

Client Designation: Luzenac Ludlow

Sample ID:	MW-1	MW-4	081799
Analytical Type:	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous
Date Sampled:	8/17/99	8/17/99	8/17/99
Date Received:	8/18/99	8/18/99	8/18/99
Units:	mg/l	mg/l	mg/l
Date of Extraction/Prep:	8/20/99	8/20/99	8/20/99
Date of Analysis:	8/20/99	8/20/99	8/20/99
Analyst:	KH	KH	KH
Method:	8100 Mod	8100 Mod	8100 Mod
Dilution Factor:	1	2	1
TPH (C9-C40)	< 0.5	< 0.5	< 0.5



## eastern analytical

*professional laboratory services*

Ted Reeves

DSM Environmental Services, Inc.

Thrasher Road, Rt.5

Ascutney, VT 05030

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 18177 DSM  
Client Identification: Luzenac Ludlow  
Date Received: 8/31/99

Dear Mr. Reeves :

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted  
< = "less than" followed by the reporting limit  
TNR = Testing Not Requested  
ND = None Detected, no established detection limit  
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Susan C. Uhler, Lab Director

9/13/99

Date



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18177

Client: DSM Environmental Services, Inc.

Client Designation: Luzenac Ludlow

Sample ID:	Seep Northeast	Seep Southwest
Analytical Type:	Sample	Sample
Matrix:	aqueous	aqueous
Date Sampled:	8/30/99	8/30/99
Date Received:	8/31/99	8/31/99
Units:	mg/l	mg/l
Date of Extraction/Prep:	9/2/99	9/2/99
Date of Analysis:	9/2/99	9/2/99
Analyst:	KH	KH
Method:	8100 Mod	8100 Mod
Dilution Factor:	1	1
TPH (C9-C40)	< 0.5	< 0.5



(PRINTED: Original) YEL | Lab F | PINK | Sect Ma

Cold ? ☐ Yes ☒ No 20°



**eastern analytical**

*professional laboratory services*

Ted Reeves  
DSM Environmental Services, Inc.  
Thrasher Road, Rt.5  
Ascutney, VT 05030

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 18784 DSM  
Client Identification: Luzenac Ludlow  
Date Received: 10/20/99

Dear Mr. Reeves :

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted  
< = "less than" followed by the reporting limit  
TNR = Testing Not Requested  
ND = None Detected, no established detection limit  
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Susan C. Uhler, Lab Director

11/3/99

Date



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18784

Client: DSM Environmental Services, Inc.

Client Designation: Luzenac Ludlow

Sample ID:	MW-1	MW-2	MW-3	MW-4	101999	SEEP EAST
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	10/19/99	10/19/99	10/19/99	10/19/99	10/19/99	10/19/99
Date Received:	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99
Units:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Date of Extraction/Prep:						
Date of Analysis:	10/22/99	10/22/99	10/22/99	10/22/99	10/22/99	10/22/99
Analyst:	JDS	JDS	JDS	JDS	JDS	JDS
Method:	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod
Dilution Factor:	1	1	1	1	1	1
Chloromethane	< 10	< 10	< 10	< 10	< 10	< 10
Vinyl chloride	< 2	< 2	< 2	< 2	< 2	< 2
Bromomethane	< 10	< 10	< 10	< 10	< 10	< 10
Chloroethane	< 10	< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethene	< 1	< 1	< 1	< 1	< 1	< 1
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
cis-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
Chloroform	< 2	< 2	< 2	< 2	< 2	< 2
1,1,1-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Carbon tetrachloride	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Trichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
Bromodichloromethane	< 2	< 2	< 2	< 2	< 2	< 2
cis-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
trans-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Tetrachloroethene	< 2	< 2	< 2	< 2	< 2	< 2
Dibromochloromethane	< 2	< 2	< 2	< 2	< 2	< 2
Chlorobenzene	< 2	< 2	< 2	< 2	< 2	< 2
Bromoform	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Methyl-t-butyl ether(MTBE)	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	< 1	< 1	< 1	< 1	< 1	< 1
Toluene	< 1	2	1	< 1	< 1	< 1
Ethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
mp-Xylene	< 1	2	1	< 1	< 1	< 1
o-Xylene	< 1	< 1	< 1	< 1	< 1	< 1
Naphthalene	< 5	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	< 1	< 1	1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	< 1	2	1	< 1	< 1	< 1

8021Bmod: The samples were analyzed by GCMS using method 8260B.



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 18784

Client: DSM Environmental Services, Inc.

Client Designation: Luzenac Ludlow

Sample ID:	MW-1	MW-2	MW-3	MW-4	101999	SEEP EAST
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	10/19/99	10/19/99	10/19/99	10/19/99	10/19/99	10/19/99
Date Received:	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99
Units:	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Date of Extraction/Prep:	10/21/99	10/21/99	10/21/99	10/21/99	10/21/99	10/21/99
Date of Analysis:	10/22/99	10/22/99	10/22/99	10/22/99	10/22/99	10/22/99
Analyst:	KH	KH	KH	KH	KH	KH
Method:	8100 Mod	8100 Mod	8100 Mod	8100 Mod	8100 Mod	8100 Mod
Dilution Factor:	1	4	1	1	1	1
TPH (C9-C40)	< 0.5	3.7	0.7	< 0.5	< 0.5	< 0.5



18784

## CHAIN-OF-CUSTODY RECORD

Page 7 of 7

### REQUESTED ANALYSES

PROJECT MANAGER: Ted Reeves  
COMPANY: DSM Env. Serv.  
ADDRESS: 23 Thrasher / P.O. Box 466  
CITY: Ascutney STATE VT ZIP 05091  
PHONE: (802) 674-2840 EXT: \_\_\_\_\_  
FAX: -6915  
E-MAIL: \_\_\_\_\_  
PROJECT NAME: Luzern Ludlow  
PROJECT # \_\_\_\_\_  
STATE: ☐ NH ☐ MA ☐ ME ☒ VT ☐ OTHER \_\_\_\_\_  
☐ Site historically contaminated

**NOTES:** (i.e., Special Detection Limits, Billing Info. if different)

please report all parameters  
for 8021B including  
trimethylbenzenes  
and naphthalene.

## RESULTS NEEDED BY

(enter preferred date): \_\_\_\_\_  
(Guaranteed rapid turnaround needs pre-approval)

QA / QC Reporting Level

☐ A    ☐ B    ☐ C**Reporting Options:**☒ Hard Copy ☒ Fax

**Electronic:**

☐ E-Mail ☐ Disk

Quote #

P.O. #

**Sampler(s):**

John Fawcett

2

11/12/19

1722

code

Relinquished by

Date

Time

FACT  
1. Good

\_\_\_\_\_

part

14

RECEIVED  
JAN 11 1964

Relinquished by

Date \_\_\_\_\_

Time

Rege

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\_\_\_\_\_

10

**FOR LAB USE ONLY**

Adhered to EPA Protocol

☐ Yes ☐ No (see attached)

## Cold?

☒ Yes ☐ No